

We Claim:

1. An isolated nucleic acid molecule comprising the sequence shown in Figure 1 (SEQ.ID.NO.:1) or a diagnostic fragment thereof.
2. An isolated nucleic acid molecule comprising (1) a nucleic sequence shown in Figure 1 (SEQ.ID.NO.:1) wherein T can also be U or a diagnostic fragment thereof; (2) a nucleic sequence that is complimentary to the sequence shown in Figure 1 (SEQ.ID.NO.:1) or a diagnostic fragment thereof; (3) a nucleic sequence that can hybridize to the sequence shown in Figure 1 (SEQ.ID.NO.:1) or a diagnostic fragment thereof; (4) a nucleic acid sequence which has substantial sequence homology to (1), (2) or (3); or (5) a nucleic acid sequence which is an analog of any of the nucleic acid sequences of (1) to (4).
- Sub A1 > 3. An isolated nucleic acid primer comprising (a) a portion of a sequence as claimed in claim 1 or 2 or (b) a sequence that is complimentary to a portion of a nucleic acid sequence claimed in claim 1 or 2.
4. A nucleic acid primer according to claim 3 wherein the primer has the sequence (a) 5'-CGGTTTAATGGCTTGTTGTGCT-3' (SEQ.ID.NO.:3) or (b) 5'-ATGCCATTAAACCGGTGGC-3' (SEQ.ID.NO.:4).
- Sub A2 > 5. An isolated nucleotide probe comprising a portion of a sequence as claimed in claim 1 or 2.
6. A nucleotide probe according to claim 5 comprising nucleotides 597-677 as shown in Figure 1 (SEQ.ID.NO.:1).
7. A nucleotide probe according to claim 6 having the sequence
C G G T T T A A T G G C T T G T T G T G G T A A

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CACCGAAGCCAGCTCAATAAATTGCTGCGATGAGTTAC
AGCTATCGAGTAAACCACC (SEQ.ID.NO.:5).

8. A nucleotide probe according to claim 7 comprising nucleotides 1059-1155 as shown in Figure 1 (SEQ.ID.NO.:1).

5 9. A nucleotide probe according to claim 8 having the sequence
T A T C C C G A A T C G C C T G G C G T T T T T G C A C A T C
CTCTGCGACGCTATTTTGTGGAACGCAAAGCCATCAAGGAAAATA
GCCA CCGGTTTAAT GGCAT (SEQ.ID.NO.:6).

Sub A3 10. A method of detecting the presence of E. coli serotypes
10 O157:H7; O157:NM or O55:H7 in a sample comprising (a) isolating nucleic
acid from the sample and (b) determining if the isolated nucleic acid
contains a nucleic acid sequence according to claim 1 or 2, wherein the
presence of a nucleic acid sequence according to claim 1 or 2 indicates the
presence of E. coli serotypes O157:H7; O157:NM or O55:H7 in the sample.

15 11. A method of detecting the presence of E. coli serotypes
O157:H7; O157:NM or O55:H7 in a sample comprising (a) isolating nucleic
acid from the sample; (b) amplifying the isolated nucleic acid with a
primer having a sequence that is complimentary to a portion of a nucleic
acid sequence according to claim 1 or 2 and (c) assaying for amplified
20 sequences, wherein the presence of an amplified sequence indicates that
the sample contains E. coli serotypes O157:H7; O157:NM or O55:H7.

12. A method according to claim 11 wherein the nucleic acid is
amplified in step (b) with a pair of primers, one having a sequence
5'-CGGTTTAATGGCTTGTGCT-3' (SEQ.ID.NO.:3) and the other
25 having the sequence 5'-ATGCCATTAAACCGGTGGC-3' (SEQ.ID.NO.:4).

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Sub A3

13. A method according to claim 11 or 12 wherein the nucleic acid is amplified in step (b) using a Polymerase Chain Reaction.

14. A method of detecting the presence of a nucleic acid molecule associated with E. coli serotypes O157:H7; O157:NM and O55:H7 in a sample comprising (a) contacting the sample under hybridization conditions with one or more of nucleotide probes which hybridize to nucleic acid molecules according to claim 1 or 2 and (b) determining if there is hybridization between the nucleic acid molecules in the sample and the nucleotide probes, wherein the presence of hybridization indicates that the sample contains E. coli serotypes O157:H7; O157:NM or O55:H7.

15. A method according to claim 14 wherein the nucleotide probe comprises nucleotides 597-677 as shown in Figure 1 (SEQ.ID.NO.:1).

16. A method according to claim 15 wherein the probe has the sequence CGGTTTAA TGGCTT GTTG TGGTAA
15 CACCGAAGCCAGCTCAATAAATTGCTGCGATGAGTTAC
AGCTATCGAGTAAACCACC (SEQ.ID.NO.:5).

17. A method according to claim 15 wherein the nucleotide probe comprises nucleotides 1059-1155 as shown in Figure 1 (SEQ.ID.NO.:1).

18. A method according to claim 17 wherein the probe has the
20 sequence TATCCCGAATCGCCTGGCGTTTTTGCACATC
CTCTGCGACGCTATTTTTGTGGAACGCAAAGCCATCAAGGAAAATA
GCCA CCGGTTTAAT GGCAT (SEQ.ID.NO.:6).

Sub A4

19. A microchip comprising a nucleic acid molecule according to claim 1 or 2 attached to a microchip.

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20. A microchip comprising a nucleotide probe according to any one of claims 5 to 9 attached to a microchip.

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